ABSTRACT

A method for detecting single photons of high energy radiation using a detector comprising an array of pixels, each pixel including a charge receptive substrate. The method includes the operations of capturing high energy photons with the pixel array, collecting the charges generated in each pixel by the charge receptive substrate of that pixel, reading out the collected charges and analyzing the read out charges. In addition, a system for detecting single photons of high energy radiation is described. The system includes a pixel array in which each pixel includes a polycrystalline photoconductive film deposited on a charge receptive substrate. The system further includes low noise electronics for reading out the charges generated by high energy photons when the latter interact with the film. Additionally, the system includes a data processor in communication with the low noise electronics.